

(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 710 462 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.05.1996 Bulletin 1996/19

(51) Int. Cl.⁶: A47J 31/00, A47J 31/06

(21) Application number: 94830529.7

(22) Date of filing: 04.11.1994

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL
PT SE

(74) Representative: Ferraiolo, Ruggero et al
Via Napo Torriani, 10
I-20124 Milano (IT)

(71) Applicant: ILLYCAFFE' S.p.A.
I-34147 Trieste (IT)

Remarks:

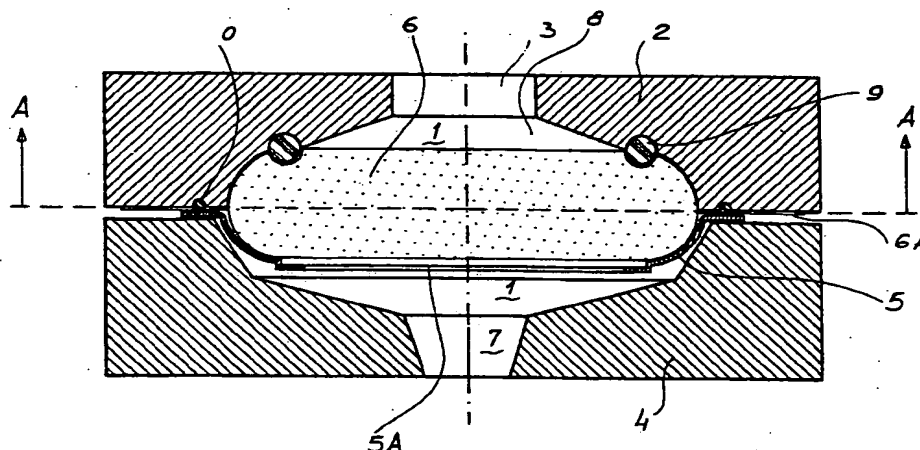
A request for correction/amendment of the specification /claims 1 + 3 has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(72) Inventors:
• Illy, Ernesto
Trieste (IT)
• Marega, Giorgio
Trieste (IT)

(54) A chamber for the brewing of a coffee beverage from a sachet of coffee

(57) In a brewing chamber for coffee beverage (1) defined by an upper body (2) into which hot pressurized water arrives and by a lower body (4) in which a filter (5) is held are combined: a circular relief (9) of the upper body (2) that penetrates into the upper perimeter of a

sachet (6) laid on a filter (5) and the characteristic of the perimeter profile of the sachet and the corresponding perimeter profiles of the upper body and of the filter being the same.

Fig. 1

Description

The present invention concerns a chamber for the brewing of a coffee beverage from a sachet of coffee.

The practice of extracting coffee beverage from a coffee sachet has long been known; the term "sachet", although improperly used, has spread in the field to define a circular cartridge, generally 35 to 50 mm. diameter, and about 5 mm. thick, that contains a dose of ground coffee, more or less compacted, held between two sheets of water permeable paper; this sachet may be set on the filter of a brewing chamber (henceforth simply called - chamber -) of a coffee machine.

This practice is well accepted by the users thanks to the simple operations and, in some cases, owing to the good quality of the beverage produced.

When a user operates the coffee machine the upper side of the sachet is invested by a flow of water at convenient pressure and temperature, so a pressurized percolation takes place through the thickness of coffee bringing a beverage with good flavour, aroma, body, froth, and other desired features, into the cup.

Although the manufacturers of coffee machines employing sachets of coffee have so far tried to improve the brewing chambers in order to obtain a better effect, still now inconveniences due to various, yet unknown, characteristics of the sachet-chamber system and, above all, to the fact that a part of the water sent onto the sachet passes between the lateral wall of the chamber and the border of the sachet; this happens because the hydraulic resistance of this system is difficult to control owing to the variable geometry and firmness of the sachet and the geometry of the chambers currently available on the market; in fact the following two types of product can be found:

- a) normally or considerably compacted sachets with a geometry made for a particular chamber;
- b) slightly or non compacted sachets, hence, more or less soft and deformable sachets, with a geometry adaptable to a brewing chamber.

Obviously compact sachets and sachets slightly or not at all compacted, the geometry of which does not adapt to a given brewing chamber, are not considered.

In 1978, the applicant had deposited an Italian utility model, later incorporated in European patent n° 0006175, that disclosed a brewing chamber in which the sachet was gripped adjacent to its peripheral border, but not all along the perimeter, so that some of the water sent to the chamber still passed between the chamber's lateral wall and the border of the sachet.

The present invention obviates at least the inconvenience mentioned above; it is a brewing chamber defined by an upper body fixed to the coffee machine, into which the pressurized hot water arrives, and a lower body that can be applied against the upper body that bears a filter onto which a sachet can be laid, the upper body features a greater volume in which the water enters and into which

the sachet may expand and a pressure means that will penetrate the sachet close to its peripheral border that is characterized by the combination of the following features: the pressure means is an upper circular relief that penetrates the upper perimeter area of the sachet; the part of chamber comprised between said relief and the lower plane of the upper body and the part of chamber defined by the curved perimeter of the filter must feature the same perimeter profile as the sachet, that, in this way, is conveniently pressed.

The upper circular relief may have a section such that it penetrates the sachet with an imprint that has depth H of the same order of size as the width L; for instance with a circular relief having a semi-circular section, the depth H of the imprint is the same as the radius of the semi-circle and the width L of the imprint is the same as the diameter of the semi-circle.

Alternatively, said relief may be of an elongated shape that begins adjacently to the joint between the upper plane part and curved part of the border of the sachet and terminates adjacent to the lower plane of said upper body, so as to press the entire upper perimeter of the sachet.

Again alternatively, the part of chamber included between the upper circular relief and said plane comprises a circular recess that defines a volume into which part of the perimeter of the sachet may expand.

Again alternatively, said reliefs are made of rubber suited for foods, metal, or other suitable material, and are lodged in appropriate sites in the chamber.

The alternative of realizing said reliefs with an elastic medium of rubber or neoprene ensures that the soft action exerted on the sachet does not endanger the integrity of the latter.

The main advantages of the invention lie in the reduction of the amount of water that passes around the periphery of the sachet and in the improvement of the brewing of coffee beverage from a sachet that, especially when not compacted, adapts to the chamber expanding into said first and second volumes before and after having been wetted by the water.

The invention is described in detail below with reference to the following attached drawings where:

- Fig. 1 is a first vertical cross section,
- Fig. 2 is a second vertical cross section, and
- Fig. 3 is a third vertical cross section.

Parts in common in the three figures bear the same reference code.

In Fig. 1 a brewing chamber is shown defined by:

- an upper body 2, fixed to a suitable coffee machine, not shown, and bearing a cylindrical aperture 3 into which hot water under pressure provided by a boiler or by a heat exchanger and a pump, not shown;
- a lower body 4, serrated to the upper body 2 in one of the convenient and well known manners; the lower plane of said upper body 2 is shown with A-A.

The lower body 4 bears a filter 5 on which a compacted sachet 6 is shown the lateral paper borders 6A of which are serrated between said two upper 2 and lower 4 bodies also by means of a rubber circular sealing gasket suited for foods O; for simple drawing the holes existing in the circular plane part 5A of the filter 5 have not been shown; this part is simply shown with two parallel lines; a lower aperture 7 will release the coffee beverage into a cup below, not shown. The aperture 3 in the upper body 2 faces a first conical volume 8; along the lower perimeter of said first volume, appropriately held in place, there is a circular relief in the shape of an O-ring 9 of rubber suited for foods that penetrates the sachet 6 where the curved border of the latter begins; the part of the chamber 1 of the upper body 2 downstream the O-ring 9 and the curved perimeter of the filter 5 are in close contact with the perimeter of the sachet 6 so as to conveniently press it.

Fig. 2 shows a circular relief 90 having an elongated section, that begins where the curved border of the sachet begins and terminates on said lower plane A-A, so that the relief penetrates around the entire upper perimeter of the compact sachet 6; this part of the perimeter is limited by the broken line D.

Fig. 3 shows that downstream from the circular relief 900 the wall of chamber 1 comprises a circular recess 10 that defines a second volume into which a part of the perimeter of sachet 6 may expand when, wetted by water, it increases its volume; it is understood that the realization as shown in this figure is suited to the use of a non compacted sachet that may adapt into the chamber expanding into this volume even before being wetted.

Claims

1. A chamber (1) for the brewing of a coffee beverage from a sachet of coffee defined by an upper body (2) at the top of which hot water under pressure arrives and by a lower body (4) applicable against said upper body (2) and bearing a filter (5) upon which a sachet (6), said upper body (2) featuring an upper volume (8) in which the sachet (6) can expand and a pressure means (9) for pressing the sachet (6) close to the perimeter of the same sachet and that is characterized by the combination of the following characteristics: the pressure means is a circular relief (9) of the upper body (2) that penetrates into the upper perimeter of the sachet (6); the part of the chamber (1) comprised between said circular relief (9) and the lower plane (A-A) of said upper body (2) and the part of the chamber (1) defined by the curved part of the filter (5) sensibly feature the same profile as the perimeter of the sachet (6), so that all that part of the chamber (1) and said curved part of the filter (5) come into close contact with the perimeter of the sachet (6) so as to conveniently press it.
2. A chamber (1) according to claim 1 characterized in that said circular relief (9) has a section such that it

penetrates the sachet (6) with an imprint having depth (H) of the same order of size as the width (L).

3. A chamber (1) according to claim 1 characterized in that the circular relief (90) has a elongated section that begins adjacent to the joint between the upper plane part and the curved part of the sachet (6) and terminates adjacent to said lower plane (A-A) so as to adequately penetrate the entire upper perimeter of the sachet (6).
4. A chamber (1) according to claim 1 characterized in that the part of the chamber (1) comprised between said circular relief (900) and said lower plane (A-A) comprises a circular recess (10) that defines a volume (10) in which the perimeter of a sachet (6) may expand.
5. A chamber (1) according to claims 1 to 4 characterized in that said circular reliefs (9, 90, 900) are of rubber suited for foods, metal or other suitable material and are lodged in appropriate sites of said chamber.

Fig. 1

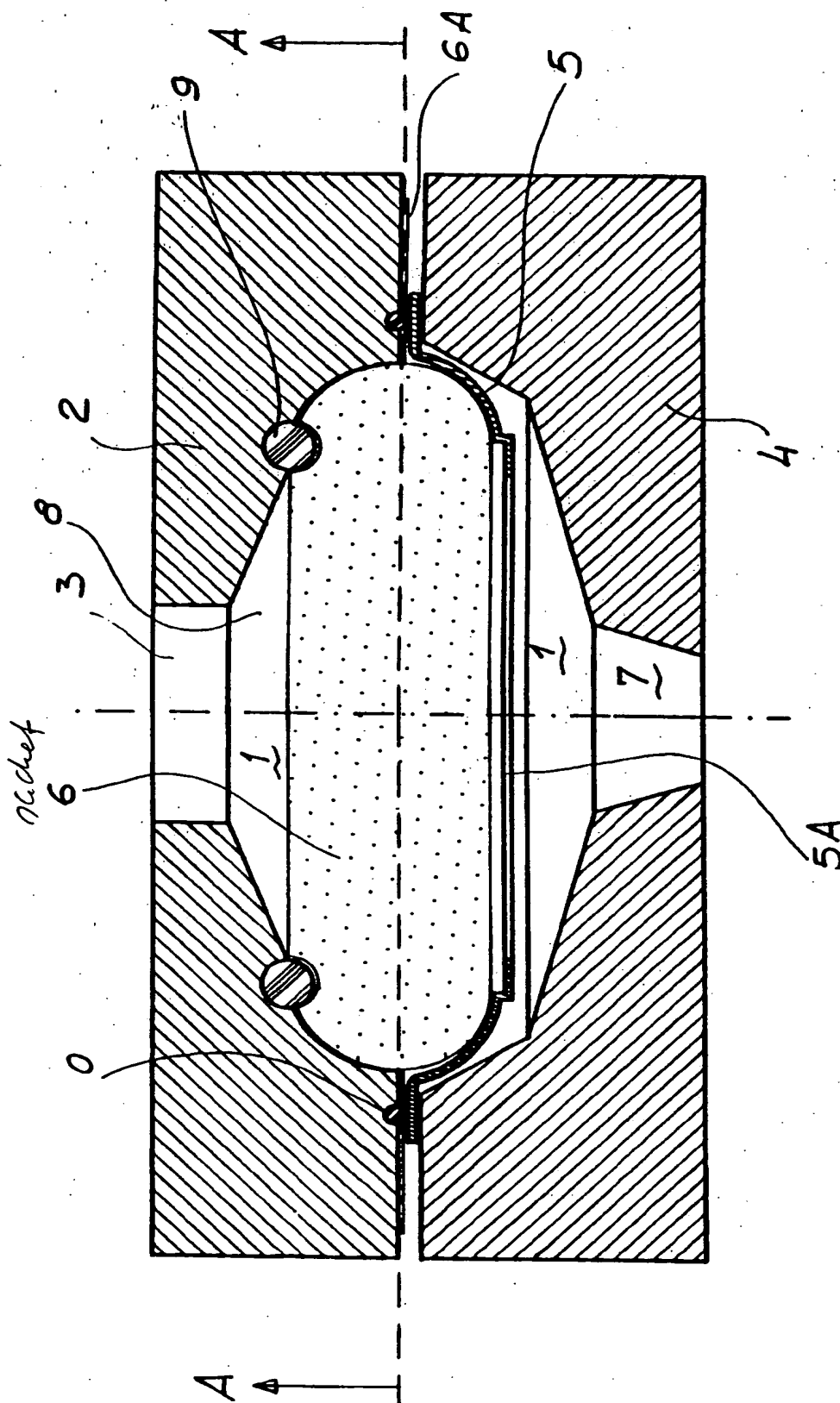


Fig. 2

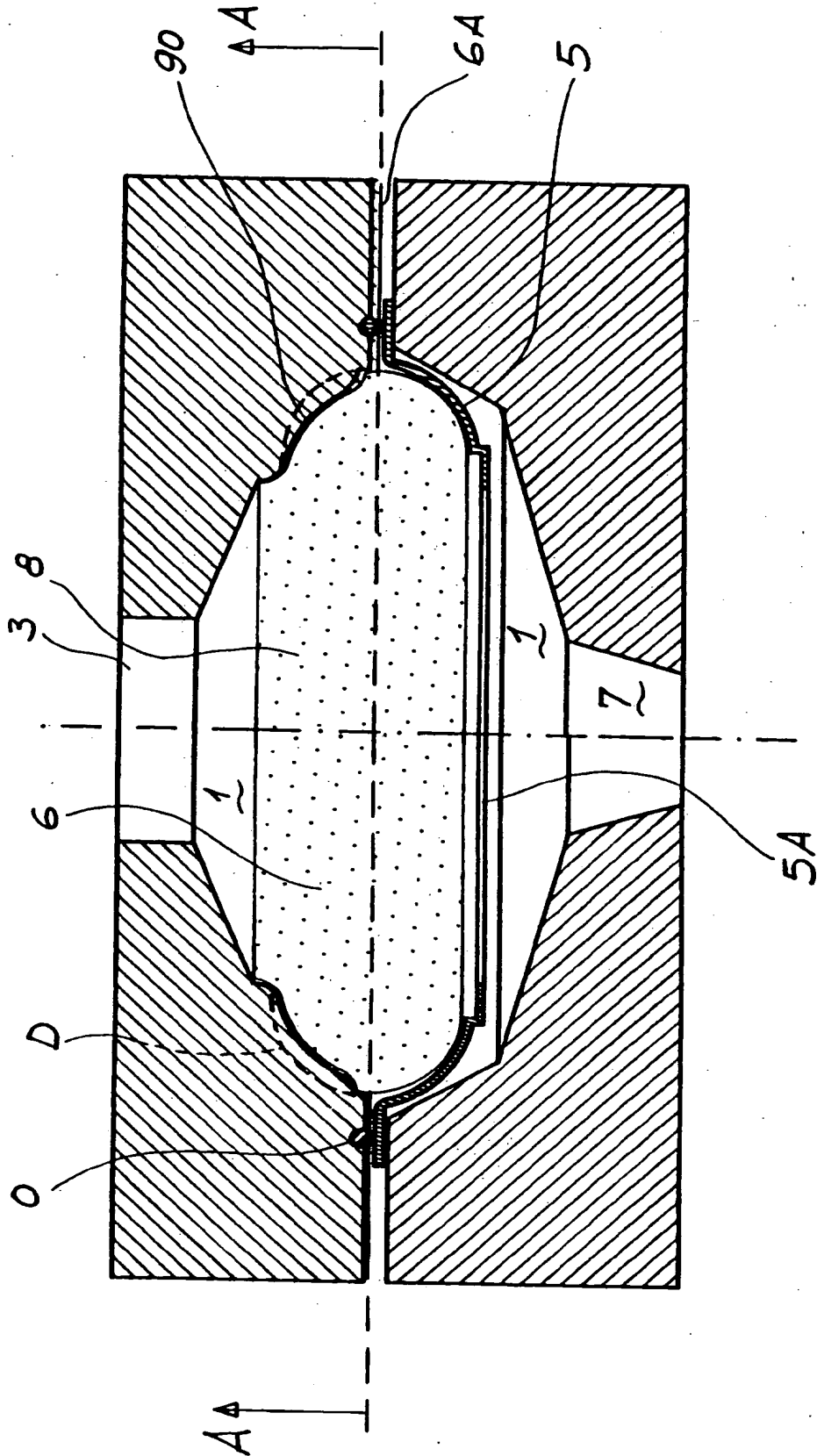
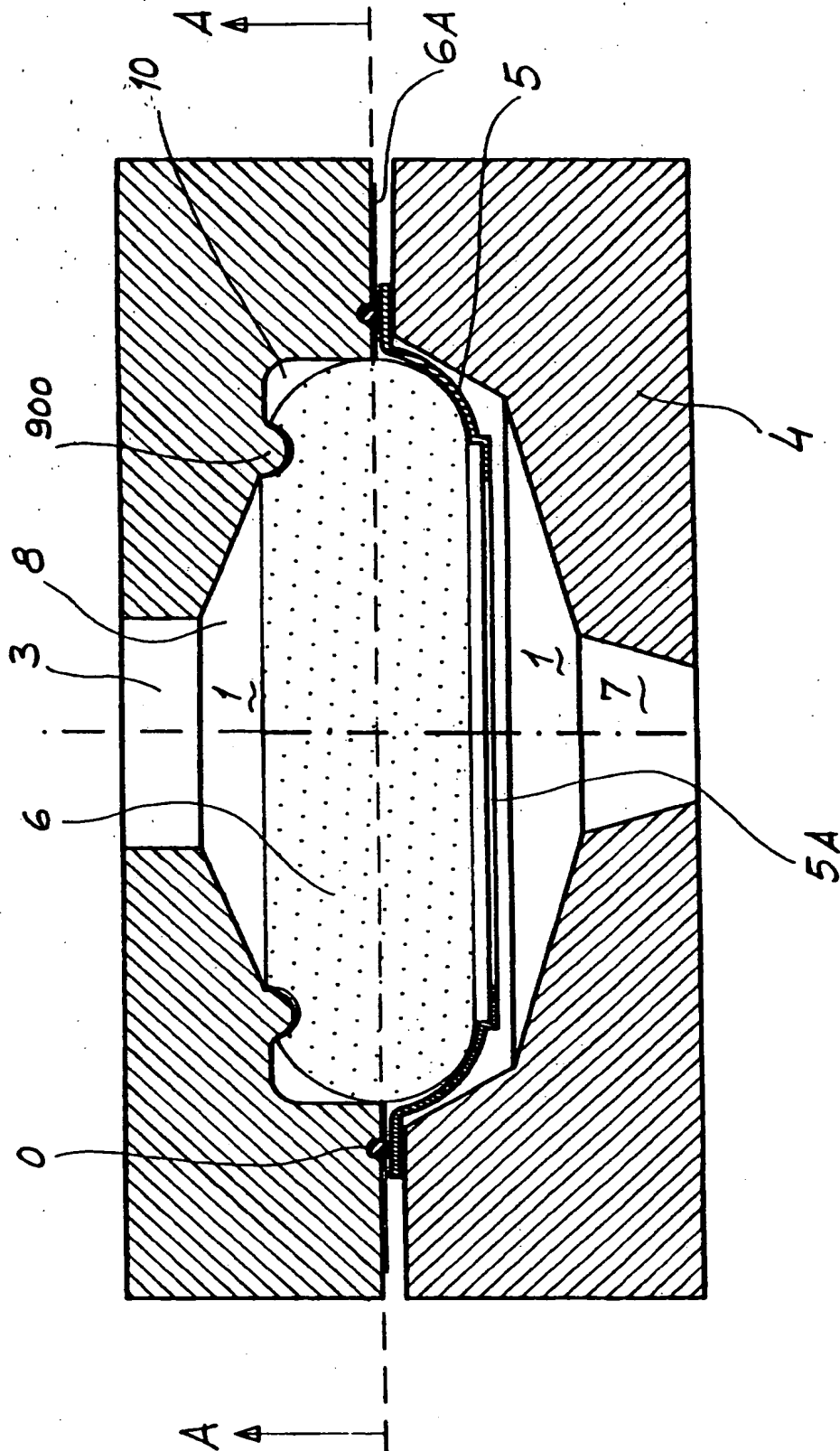


Fig. 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0529

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	FR-A-2 617 389 (DESALTERA) * page 7, line 27 - page 8, line 34; figure 3 *	1-3	A47J31/00 A47J31/06
Y	BE-A-620 881 (BLOEMEN) * page 3; figure 2 *	1-3	
A	US-A-3 561 349 (ENDO) * column 1, line 74 - column 3, line 20; figures 5-10 *	1,2,4	
A	US-A-3 620 155 (BIXBY) * column 2, line 19 - column 5, line 6; figures 4-6 *	1	
A	WO-A-94 02059 (SOCIÉTÉ DES PRODUITS NESTLÉ S.A.) * page 24, line 9 - line 27; figures 1,1A *	1	
A	EP-A-0 249 700 (GESEN)		TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US-A-3 143 955 (ROCKWELL)		A47J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 April 1995	Examiner Bodart, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			